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G89-926 Swine Reproductive Problems: Infectious Causes

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Swine Reproductive Problems: Infectious Causes

This NebGuide describes causes, clinical signs, control, prevention and treatment of swine reproductive problems due to infectious diseases.

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The reproductive potential for the ideal sow has been calculated as 31.2 pigs weaned per year.

These calculations are as follows:

Gestation	=	114 days
Lactation	=	21 days
Rebreeding	=	5 days
Farrowing interval	=	140 days

365 days divided by 140 = 2.6 litters/year. 2.6 x 12 pigs/litter = 31.2 pigs weaned per year.

The United States average is 14 pigs per sow per year--less than one-half the reproductive potential of the ideal sow. A major part of this low reproductive efficiency is due to either infectious or non-infectious causes. The infectious causes of swine reproductive problems are addressed here.

Reproductive problems in swine may be due to one or more of the following infectious diseases:

1. Parvovirus
2. Enteroviruses
3. Leptospirosis
4. Brucellosis
5. Pseudorabies
6. Hog cholera
7. Swine Influenza
8. Parasites
9. Encephalomyocarditis (EMC)
10. Streptotococcus suis
11. Erysipelas

Parvovirus

Cause

Parvovirus infects swine herds throughout the world. About 99 percent of Nebraska's swine herds are infected with this virus.

Clinical Signs

Embryonic and fetal deaths in pregnant gilts and sows are characterized by:

1. delayed return to estrus
2. anestrus--gilts or sows may be pseudopregnant and therefore do not recycle or farrow
3. small litters
4. mummified feti--the cardinal sign of parvovirus infection
5. infrequent abortion
6. gilts, sows and boars are not affected by parvovirus.

Control

Replacement gilts should be managed in a way that helps insure exposure to parvovirus from the main breeding herd before the gilts are bred.

Prevention

1. Replacement gilts should be vaccinated twice with killed parvovirus vaccine at six weeks and three weeks pre-breeding. Single booster injections of killed parvovirus vaccine should be given three to six weeks prior to breeding for the second and all subsequent parities. Replacement boars should be vaccinated six weeks and three weeks pre-breeding. Boars should receive single booster vaccinations every six months. 2. An alternative method is to blood test all replacement gilts at 6 1/2 months of age. Gilts that have serum antibody titers equal to or less than 1:1000 are discarded. Typically one would discard 15 percent of replacement gilts with low titers, indicating they had not yet become infected with the virulent field virus. Infection with field virus provides solid lifetime immunity.

Treatment

There is no treatment for parvovirus.

Enterovirus

There are no conventional swine herds described in the literature that are free of one or more of the 10 or so serotypes of Porcine Enteroviruses.

The term SMEDI (stillbirths, mummies, embryonic death and infertility) is an acronym first used in 1965 to describe a group of viruses that caused a reproductive syndrome in swine. The name SMEDI has been discarded since enteroviruses, parvovirus and other viruses have been identified as causes of this group of clinical signs.

Enteroviruses cause clinical signs similar to those due to parvovirus. Ninety percent of virus reproductive problems in gilts and sows is reported as due to parvovirus. At present no state or private diagnostic laboratory is testing for enterovirus on a routine basis.

Control

Enterovirus can be controlled by co-mingling new replacement boars or gilts by fence line contact or exchange of manure for 30 days before breeding begins.

The co-mingling helps establish immunity to any new serotypes of enteroviruses that may enter the herd by way of the replacement animals.

Leptospirosis

Cause

Leptospirosis is caused by a spirochete genus of bacteria. Six species of leptospiora have been implicated in reproductive problems in swine in the United States. These species are *L. pomona, L. grippotyphosa, L. canicola, L. icterohemorrhagiae, L. hardjo*, and *L. bratislava*.

Clinical Signs

Abortions, stillborns and weak piglets are the primary signs of leptospirosis. In general, these signs occur late in gestation or at farrowing time.

Diagnosis

Leptospirosis is diagnosed by positive blood tests of the sows at the time of reproductive problems or identification or culture of the organism from affected piglets in the diagnostic laboratory.

Prevention

Vaccinating gilts, sows and boars three to four weeks prior to breeding for every parity in known infected herds is a well-accepted procedure for preventing leptospirosis. Historically, a five-way bacterin of the five leptospira has been used. A single-way bacterin containing *L. bratislava* is commercially available.

There is some difference of opinion on whether virulent strains of *L. bratislava* currently exist in the United States, although many herds are seropositive to the blood test for *L. bratislava*. Consult with your local practicing veterinarian about the advisability of vaccinating for *L. bratislava*. Your veterinarian can assess the leptospirosis situation in your herd from reproductive performance and on-going research on *L. bratislava*.

Treatment

Leptospirosis can be treated by injecting dihydrostreptomycin under the supervision of a veterinarian. Feeding chlortetracycline at the level of 400 grams/ton (or 1 gram per sow per day) for 10 days is also an effective method to treat leptospirosis. Treatment should be coordinated with vaccination.

Public Health Implications

The various species of Leptospira cause Weil's Disease (severe form of leptospirosis and other diseases in man). Proper sanitary precautions should be taken by personnel working in swine herds infected with Leptospirosis, especially in cases of abortion, stillborn or weak pigs or when performing obstetrical procedures.

Brucellosis

Cause

Brucellosis is an infectious disease of swine caused by the bacterium *Brucella suis*.

Brucellosis presently is rare in Nebraska swine herds but should not be forgotten because of its threat to human health. It causes undulant fever in humans, which is characterized by intermittent fever and sweating. In the past, most cases of human brucellosis were caused by the swine form, *Brucella suis*, which is more pathogenic for man than other Brucella species found in the United States.

Clinical Signs

Abortion, infertility, orchitis (inflammation of the testicles), posterior paralysis and lameness all are signs of brucellosis. Abortions occur at anytime during gestation while leptospirosis, for example, generally causes late abortions.

Treatment

There is no treatment for swine brucellosis nor is there a vaccine.

Control

Because of the severe public health implications, the herd is best depopulated if infected with *Brucella suis*.

Pseudorabies (PRV)

Cause

Pseudorabies is caused by a herpesvirus which has had increased importance in the United States since 1961. At present approximately 10 percent of all swine herds in the major swine producing states are infected with pseudorabies virus.

Clinical Signs

The clinical signs of pseudorabies are excessive salivation, fever, depression and convulsions. Mortality is high, up to 80 percent or higher in pigs under three weeks of age and about two percent in adult swine. Pregnant gilts and sows infected with PRV suffer embryonic death, abortion and birth of macerated (softened and decomposed) fetuses and stillbirths.

Lowered conception rate often is reported in the next several months following an outbreak of pseudorabies in a herd.

Control

Pseudorabies is controlled by vaccinating the breeding herd every six months. The timing of vaccination is usually three or four weeks before farrowing. New vaccines have a companion test kit that permits the differentiation of field virus serum titers from those caused by vaccine. Because pseudorabies vaccines and/or tests are continually being developed, a local veterinarian should be consulted for current advice.

Hog Cholera

Although hog cholera virus was eradicated from the United States in 1976, it still exists in most of the countries in the rest of the world. American pork producers and veterinarians are the front line of defense in detecting and reporting any accidental re-entrance of this devastating swine disease into this country.

Clinical Signs

The clinical signs of hog cholera are very sick pigs, lack of appetite, depression, lethargy, fever of 106° F, conjunctivitis (redness of the white of the eye) with eyelids stuck together, piling and huddling, blue skin on the abdomen, and a weaving, staggering gait.

From the reproductive aspect, hog cholera can result in abortion, mummified fetuses, malformations, stillbirth, weak pigs and pigs with tremors.

All of these points emphasize the importance of obtaining professional veterinary assistance plus the backup services of a good veterinary diagnostic laboratory when solving the cause of swine reproductive problems. It's not a do-it-yourself situation.

Swine Influenza

Cause

Swine influenza is caused by infection with type A influenza virus.

Clinical Signs

Influenza is primarily a respiratory disease, but influenza virus also is well documented as a cause of

reproductive problems. The respiratory form of swine influenza is characterized by a hard paroxysmal (very deep) cough and labored, jerky breathing. Prostration (extreme exhaustion) and complete loss of appetite are common. Fever up to 108°F is common.

The reproductive problems associated with swine influenza virus are small litters, slow growth rate, stunting and death during the suckling period and after weaning. Infected sows and gilts also may abort in late pregnancy and undergo resorption of embryos.

In earlier times influenza occurred mostly as colder weather approached in the fall season. Presently, many pigs are raised in complete confinement and, therefore, the incidence of swine influenza is more difficult to be perceived as a problem because the disease can be encountered throughout the year, not just fall and winter. For this reason, swine influenza virus frequently is not considered in the differential diagnosis of a reproductive problem.

Treatment

There is no treatment for the respiratory form of swine influenza virus infection. However, antibacterials are useful as treatments for secondary bacterial infection.

Control

Because no vaccine is available, try to have gilts infected and recovered from influenza virus before breeding by exposing them earlier to infected sows.

Encephalomyocarditis

Cause

Encephalomyocarditis virus (EMCV) is the cause of stillbirths, mummified and macerated or softened, festuses. It also causes heart lesions and sudden death in young pigs, usually up to 21 days of age.

EMCV has been found in Australia and other parts of the world. Isolation of this virus in the United States has been done from field cases by researchers at the University of Minnesota.

In the absence of the diagnosis of other causes of still-births and mummified fetuses and concurrent mortality in suckling piglets, EMCV should be considered.

Streptococcus suis

Cause

Streptococcus suis is caused by one of 14 or more serotypes of the bacterium, *Streptococcus suis*.

Clinical Signs

White, purulent vaginal discharge in gilts and sows at various times from before breeding to post-farrowing are signs of *Streptococcus suis*. Typically, there is a copious discharge about one day after farrowing. Conception rate can drop as low as 50-60 percent.

Treatment

Sows and gilts should be injected with penicillin as advised by a veterinarian.

Prevention/Control

Isolate the specific *Streptococcus suis* organism and have a federally licensed Autogenous Vaccine Laboratory prepare a vaccine. Vaccine must use a good paraffin based adjuvant (carrier component of a vaccine) as *Streptococcus suis* is not a good antigen (it doesn't produce a good immune response without a good adjuvant).

If the problem persists, continue to look for new serotypes of *Streptococcus suis* as often the herd is infected with two or more known serotypes. Add newly isolated serotypes to the autogenous vaccine as required. This is definitely a job for a veterinarian.

Vaccination Schedule

Use the autogenous vaccine prepared for a farm as follows: gilts should be given two injections five and two weeks before breeding with the pre-breeding injections being three weeks apart and one booster injection three to four weeks pre-farrowing.

Public Health Implications

Streptococcus suis causes meningitis and hearing loss in humans. Therefore, pork producers with *Streptococcus suis* infected herds should take necessary sanitary precautions when working with infected swine populations.

Erysipelas

Cause

Erysipelas is caused by the bacterium, *Erysipelothrix rhusiopathiae*.

Clinical Signs

Abortion may occur in sows or gilts that contract erysipelas during pregnancy. The sow or gilt is usually very sick and commonly may have a high temperature of 108°F.

Diamond-shaped, light pink to angry dark purplish lesions may be seen on the skin. Sometimes the lesions are large and splotchy (blotch or spots) rather than diamond-shaped.

Treatment

Penicillin injections should be given to visibly sick sows or gilts. The entire group should be medicated with tetracycline in the drinking water for five days after no newly sick sows or gilts are observed.

Control

All gilts and sows should be given erysipelas bacterins. Replacement gilts should receive two doses of erysipelas bacterin at five weeks and two weeks pre-breeding, plus a single booster injection of

erysipelas bacterin three or four weeks prior to every farrowing.

Parasites

Severe infestation with Sarcoptic mange mites causes anemia in sows. Anemia causes a lowered conception rate. Eradication of Sarcoptic mange mites, or at least a good control program, has been shown to greatly improve reproductive performances in swine breeding herds.

Summary

The most common infectious causes of reproductive problems in swine are parvovirus, enterovirus, leptospirosis and pseudorabies. Other less common infectious causes of reproductive problems are brucellosis, hog cholera, swine influenza, encephalomyocarditis, *streptococcus suis,* erysipelas and parasites. This publication briefly describes the cause, clinical signs, control, prevention and treatment of the previously mentioned diseases.

Pork producers should give the highest possible priority to controlling reproductive problems. Solving reproductive problems requires all the skills of the manager/producer and the veterinarian in conjunction with diagnostic laboratory services.

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